

CLAIMS:

1. An engine start control device for a hybrid vehicle equipped with an electric motor and an engine with an induction system, comprising:
 - a hybrid controller that performs an engine start determination to determine whether the engine should be started while the electric motor is running;
 - an acceleration position sensor that detects an acceleration demand during the engine start determination; and
 - a start/power generation motor that starts the engine, wherein the start/power generation motor controls a pressure in the induction system based on acceleration demand.
2. The engine start control device for a hybrid vehicle as set forth in claim 1, wherein the hybrid controller determines whether the engine should be started based on the acceleration demand of the driver.
3. The engine start control device for a hybrid vehicle as set forth in claim 1, wherein the acceleration position sensor detects the acceleration demand of the driver based on an amount of pressure on an accelerator pedal.
4. The engine start control device for a hybrid vehicle as set forth in claim 1, wherein the hybrid controller, which is equipped with a SOC detector to detect a state of battery charge, determines whether the engine should be started based on the state of battery charge.
5. The engine start control device for a hybrid vehicle as set forth in one of claim 1, wherein the start/power generation motor cranks the engine with a throttle valve opening based on the acceleration demand and the hybrid controller starts the engine by starting a fuel injection a predetermined time after the cranking starts.

6. The engine start control device for a hybrid vehicle as set forth in one of claims 1, wherein the start/power generation motor controls the induction system pressure drop so that as the acceleration demand decreases, the induction system pressure drop increases.
7. The engine start control device for a hybrid vehicle as set forth in one of claims 5, wherein the start/power generation motor encloses the throttle gate opening when the acceleration demand falls below a predetermined demand.
8. The engine start control device for a hybrid vehicle as set forth in one of claims 5, wherein the start/power generation motor makes the throttle gate opening as wide as the acceleration demand is large when the acceleration demand is greater than a predetermined demand.
9. The engine start control device for a hybrid vehicle as set forth in one of claims 5, wherein the start/power generation motor extends the time from the start of the cranking to the start of the fuel injection as the acceleration demand decreases.
10. The engine start control device for a hybrid vehicle as set forth in one of claims 5, wherein the time from the start of the cranking to the start of the fuel injection spent by said start/power generation motor is the lesser of the first delay time calculated based on the amount of pressure on the accelerator pedal and the second delay time calculated based on the rate of the pressure on the accelerator pedal.
11. A method comprising:
 - determining whether an engine should be started while a motor is running, wherein the engine comprises an induction system;
 - detecting an acceleration demand of a driver during an engine start determination; and
 - starting the engine after controlling a pressure in the induction system based on the acceleration demand.

12. The method of claim 11, further comprising determining whether the engine should be started based on the acceleration demand of the driver.
13. The method of claim 11, wherein detecting an acceleration demand of the driver comprises detecting the acceleration demand of the driver based on an amount of pressure on an accelerator pedal.
14. The method of claim 11, further comprising:
detecting a state of battery charge; and
determining whether the engine should be started based on the state of battery charge.
15. The method of claim 11, further comprising:
cranking the engine with a throttle gate opening based on the acceleration demand;
and
starting the engine by starting a fuel injection a predetermined time after the cranking starts.
16. The method of claim 11, further comprising controlling the induction system pressure drop so that as the acceleration demand decreases, the induction system pressure drop increases.
17. The method of claim 15, further comprising enclosing the throttle gate opening when the acceleration demand falls below a predetermined demand.
18. The method of claim 15, further comprising making the throttle gate opening as wide as the acceleration demand is large when the acceleration demand is greater than a predetermined demand.
19. The method of claim 15, further comprising extending the time from the start of the cranking to the start of the fuel injection as the acceleration demand decreases.

20. The method of claim 15, wherein the time from the start of the cranking to the start of the fuel injection is the lesser of the first delay time calculated based on the amount of pressure on the accelerator pedal and the second delay time calculated based on the rate of the pressure on the accelerator pedal.

21. An engine start control device for a hybrid vehicle equipped with an electric motor and an engine, comprising:

means for performing an engine start determination while the electric motor is running;

means for detecting an acceleration demand of a driver during the engine start determination; and

means for controlling an induction pressure of an induction system to start the engine based on the acceleration demand.